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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/091,503	03/07/2002	Eiji Okamoto	220484US2	8763
22850	7590	02/07/2006		
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER PANWALKAR, VINEETA S	
			ART UNIT 2631	PAPER NUMBER

DATE MAILED: 02/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/091,503

Applicant(s)

OKAMOTO, EIJI

Examiner

Vineeta S. Panwalkar

Art Unit

2631

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 November 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 9 and 11 is/are rejected.
- 7) ☒ Claim(s) 5-8, 12 and 13 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-4, 9 and 11 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1- 4 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Kaewell, Jr. (US 6256339 B1), hereinafter Kaewell.
- 2a. Regarding claim 1, Kaewell discloses a multi-channel Viterbi decoder wherein is disclosed a multi-mode block-coded modulation/demodulation method for a transmission system equipped with a multi-mode encoder and a multi-mode decoder (Fig.2, transmitter 19 and receiver 21 perform the claimed modulation/demodulation method) comprising the steps of:
 - determining a transmission mode based on transmission data contents, an amount of data and a required transmission quality (Column 3, lines 39-53.

the selection of one of various data rates is interpreted as the claimed determining; the selection is made based on whether it is voice or non voice data (claimed data contents), the amount of voice activity (claimed amount of data); see column 2, lines 18-19 and column 5, lines 38-40. The SNR is kept as great as possible by varying data rates and thus a certain gain and noise figure are received for each symbol sent. This is interpreted as the claimed mode determination based on required transmission quality);

- making changes to a number of code levels, the multi-mode encoder, a modulation system and a signal point assignment method based on the mode (The code levels and thus the modulation and signal point assignment inherently change as per selected data rate. See column 4, lines 43-50; since redundancy is introduced by sending the symbols at 64kbps, effectively, for rates lower than 64kbps, symbols with fewer code levels are sent);
- encoding the data to obtain a signal; sending the signal; receiving the signal; (Transmitter 19 sends the encoded signal and it is received by receiver 21; see column 3, line 53 – column 4, line 50).
- determining a number of trellis states and decoding the received signal using maximum-likelihood decoding (column 4, lines 20-31. The multi-rate Viterbi decoder 61 is interpreted as the element performing the claimed maximum-likelihood decoding).

2b. Regarding claim 2, Kaewell further shows a method comprising:

- the step of using a different mode for each block code frame (Column 3, lines 47-52).
- 2c. Regarding claim 3, Kaewell also shows a method comprising a method further comprising:
- the step of carrying out maximum-likelihood decoding on a receiving side by a single Viterbi decoder which uses a trellis diagram that includes all modes. (Column 4, lines 20-37).
- 2d. Regarding claim 4, Kaewell also shows a method comprising a method further comprising:
- the step of carrying out mode selection and decoding simultaneously on the receiving side by performing Viterbi decoding (Column 4, lines 20-37).
- 2e. Regarding claim 9, Kaewell discloses a method, further comprising:
- the carrying out multi-mode transmission wherein numbers of transmission symbols are identical to numbers of block code bits (Column 3, lines 53-62 and column 4, lines 43-50; each symbol is a QPSK symbol, thus having identical number of bits).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kaewell in view of Imai et al. in "A New Multilevel Coding Method Using Error-Correcting Codes", (IEEE Transactions on Information Theory, Vol. IT-23, No.3, pp. 371-377, May 1977), hereafter referred to as Imai.

Kaewell discloses all the limitations of the claim (See Paragraph 2a above).

However, Kaewell is silent regarding unequal error protection.

In the same filed of endeavor, however, Imai discloses multilevel coding method wherein:

- transmissions at each level comprise an unequal error protection portion that differs according to a modes and an equal error protection portion. (Fig. 1 and Page 371, right-hand column, first paragraph of Section II. The different rates, k_i/n_i provide the unequal and equal error protection, depending on inequality and equality respectively of the values of k and n).

Thus, it would be obvious to a person of ordinary skill in the art to use equal and unequal error protection, as Imai's teachings suggest that efficient

communication systems can be obtained by choosing these error correcting codes appropriately. (Page 377, left-hand column, first paragraph of Section V).

Allowable Subject Matter

4. Claims 5-8, 10, 12 and 13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:
 - Ushirokawa (US 5644603) discloses a maximum-likelihood sequence estimator wherein the number of trellis states is determined based on signal received.
 - Kim et al. (US 6483881 B1) disclose a method of reducing complexity in a trellis decoder wherein the number of trellis states need to be determined.
 - Hall et al. (US 2002/0126650 A1) disclose an adaptive multi-rate encoder with different modulation schemes.

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vineeta S. Panwalkar whose telephone number is 571-272-8561. The examiner can normally be reached on M-F 8:30-5:00.
- If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on 571-272-3021. The fax

phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

VP

TESFALDET BOGURE
PRIMAR EXAMINER

